

Ultra-Compact Slow-Light Enhanced Multiband Spectral Interferometer, Phase I

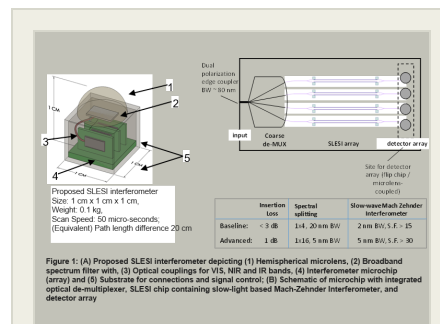
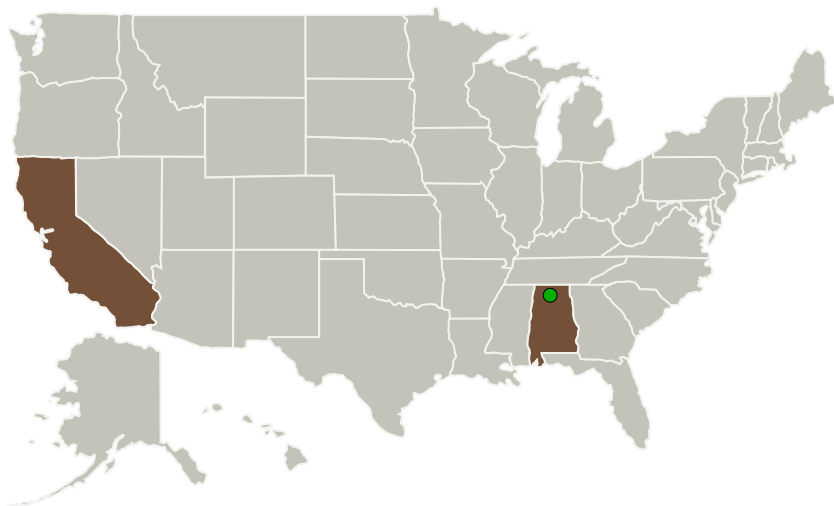
Completed Technology Project (2016 - 2016)



Project Introduction

Future NASA Earth science and Space missions will benefit from spectroscopic measurements made using compact, energy efficient and inexpensive instruments, which do not sacrifice performance compared to today's instruments, but can be deployed on small-form-factor, energy-constrained platforms such as micro-satellites, airborne vehicles, and planetary rovers. Microtek Inc. will develop a multi-band spectrometer which provides high spectral resolution, comparable to that of a conventional Fourier transform infrared spectrometer, but more than a factor of ten thousand smaller in size and lighter in weight by leveraging recent advances in microphotronics technology, and replace the mechanically-controlled delay element of the conventional instrument by electrically-controlled phase shifters within microphotonic semiconductor waveguides for faster operation by a factor of one thousand. Underlying this device is the concept of slow-light in microphotonic structures as demonstrated in scientific laboratories. By leveraging silicon wafer foundry processing, we will leverage scalable manufacturing for integrated photonics, and Microtek has demonstrated expertise in multi-chip packaging design and assembly previously used to develop micro-spectrometers and other compact instruments.

Primary U.S. Work Locations and Key Partners



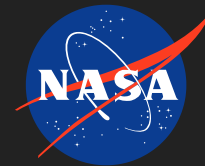
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Organizations Performing Work	Role	Type	Location
Microtek, Inc.	Lead Organization	Industry Minority-Owned Business, Small Disadvantaged Business (SDB)	San Diego, California
● Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations

Alabama	California
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Project Transitions

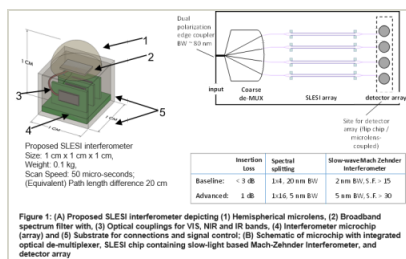
June 2016: Project Start

December 2016: Closed out

Closeout Documentation:

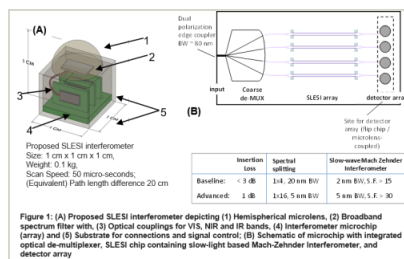
- Final Summary Chart(<https://techport.nasa.gov/file/139620>)

Images



Briefing Chart Image

Ultra-Compact Slow-Light Enhanced Multiband Spectral Interferometer, Phase I
(<https://techport.nasa.gov/image/129321>)



Final Summary Chart Image

Ultra-Compact Slow-Light Enhanced Multiband Spectral Interferometer, Phase I Project Image
(<https://techport.nasa.gov/image/125881>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Microtek, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Tri Le

Co-Investigator:

Tri K Le

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Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX08 Sensors and Instruments
 - └ TX08.1 Remote Sensing Instruments/Sensors
 - └ TX08.1.3 Optical Components

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System